

ISTEP+ Spring 2009

Indiana Statewide Testing for Educational Progress Plus

Mathematics • English/Language Arts • Science
Grade 6



Indiana Department of Education
SUPPORTING STUDENT SUCCESS

Web Version

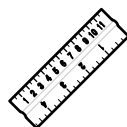
Use only a Number 2 pencil to respond to the questions in this book. Responses written in pen CANNOT be scored.



If you see this symbol, you may use your reference sheet to help solve the problem.



If you see this symbol, you may use a calculator to solve problems in the test.



If you see this symbol, use your ruler as a straightedge or to solve the problem.

Acknowledgments: CTB is indebted to the following for permission to use material in this book.

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NOTE: A correct answer **CANNOT** receive full credit if no work is shown.

Since you may receive partial credit for all problems in this test, it is important to show ALL work in the spaces provided in this book. When you see the words **Show All Work**, be sure to

- **show all the steps needed to solve the problem**
- **make your handwriting clear and easy to read**
- **write the answer on the answer line**

As you complete each problem, remember to

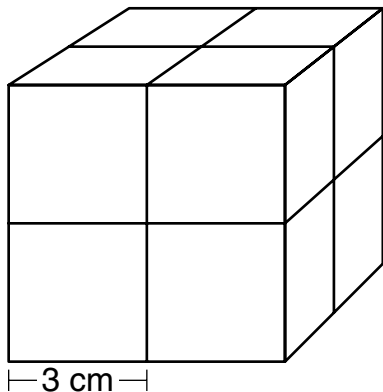
- ☒ **READ** the problem carefully
- ☒ **PLAN** how to solve the problem
- ☒ **SOLVE** the problem showing all steps
- ☒ **CHECK** your work



Session 1: Mathematics

1

A small cube measures 3 centimeters on each side. Wanda arranged 8 of these cubes to form a larger cube, as shown in the diagram below.



What is the volume, in cubic centimeters, of the larger cube?

Show All Work

Answer _____ cubic centimeters

Go On

2

David is baking cookies.

The recipe makes 48 cookies. The recipe uses $\frac{1}{4}$ cup of brown sugar.
How much brown sugar will David need to make 72 cookies?

Show All Work

Answer _____ cup(s)

Explain how David could use the total amount of brown sugar needed to make 48 cookies to determine the amount of brown sugar needed to make 240 cookies. Use words, numbers, and/or symbols in your explanation.



3

As part of a cell phone plan, the Mitchell family can use 1,800 minutes each month without additional charges. There are 3 members of the Mitchell family that have cell phones: Dan, Claire, and Rose.

Write an equation that can be used to determine the number of minutes (m), without additional charges, each family member can use each month if each member uses an equal number of minutes.

Equation _____

The cell phone plan charges \$0.35 for every minute over the 1,800-minute limit. Last month:

- Dan used 116 more minutes than his equal share.
- Claire used 52 fewer minutes than Dan.
- Rose averaged 18 minutes of phone calls each day during the 30-day month.

How much will the family be charged for the number of minutes over their 1,800-minute limit?

Show All Work

Answer \$ _____

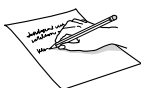


ATTENTION! Please do not leave your punchouts or reference sheet in this book.



STOP! --- STOP! --- STOP! --- STOP! --- STOP! ---

Use only a Number 2 pencil to respond to the questions in this book. Responses written in pen CANNOT be scored.



Whenever you see this icon, you will be doing a writing activity. Your writing will not be scored on your personal opinions or choices, but will be scored objectively on

- how clearly you address the prompt
- how well you organize your ideas
- how effectively you express yourself
- how consistently you use correct paragraphing, grammar, spelling, and punctuation

Be sure to use the rules of Standard English. Standard English is the English commonly used in formal writing. It does not include slang or jargon.

Session 1: English/Language Arts

1

After-School Program

Read the writing prompt below and complete the writing activity.

Imagine that your school plans to add an after-school program with a wide variety of activities that students can choose to attend. Other schools have offered music lessons, arts and crafts, sports, games, and foreign language classes. The principal is asking for suggestions about what activities students would be interested in. What activity do you think should be included in the after-school program?

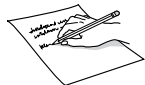
Write a persuasive essay in which you suggest an activity and explain why your activity should be included in an after-school program. In your persuasive essay, try to convince the principal that your activity would be interesting and valuable to students.

Be sure to include

- a clear statement of the specific activity you think should be included in an after-school program
- an explanation of why you think the activity should be included
- details to convince the principal that your activity would be interesting and valuable
- an introduction, a body, and a conclusion to your persuasive essay

Go On





Use the Prewriting/Planning space or additional paper for notes, lists, webs, outlines, or anything else that might help you plan your writing. Then write your persuasive essay on the lined pages. Be sure to write neatly. Using the Editing Checklist on page 14, check your writing for correct paragraphing, grammar, spelling, punctuation, and the use of Standard English.

Prewriting/Planning

NOTE: Only your writing on the lined pages in this book will be scored.



Prewriting/Planning

NOTE: Only your writing on the lined pages in this book will be scored.

DO NOT WRITE HERE

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Go On



Title: _____

[illegible]

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Handwriting practice area with 20 horizontal lines.

Session 1

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Go On



Now check your writing using this Editing Checklist.

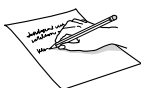
Editing Checklist

- 1** Check your capitalization and punctuation.
- 2** Spell all words correctly.
- 3** Check for sentence fragments or run-on sentences.
- 4** Keep verb tense consistent.
- 5** Make sure subject and verb agree.
- 6** Use words according to the rules of Standard English.
- 7** Remember to paragraph correctly.



STOP! STOP! STOP! STOP! STOP!

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Session 2: English/Language Arts

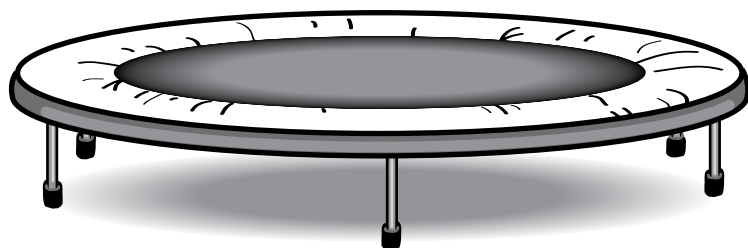
For Session 2, you will read a passage called “Trampoline” and complete Numbers 1 through 3. You may look back at the passage as often as you like.

Go On





Trampoline



by Don Wulffson

It all started with an eleven-year-old from Iowa named George Nissen. One day in 1926, George was at the circus with his family, watching tightrope walkers and trapeze artists. He thought they were great, especially when they intentionally took flying leaps to the safety net below—and then continued performing. They bounced up and down on the net and did twists, spins, and long, fantastic somersaults.

That's when the idea was born. When he was in high school, George decided he was going to make a device that would work like the safety net. It would be a small version that he and his friends could have fun jumping around on.

Soon George had taken over the family garage and begun work on what he called his “bouncing table.” “Bouncing tables” had been made before, but mostly as props for stunts at carnivals and shows. What George wanted was a contraption¹ that anyone could order for a backyard or gymnasium.

At the local junkyard, he hunted for materials—springs, rubber inner tubes, and metal for making a frame. Then he took his savings and bought a heavy-duty industrial sewing machine that could sew canvas.

All through high school and then through college, George kept working on his invention. He and his friends had a good time clowning around on the thing. But George was always looking for ways to improve it. It had to be safe, have great bounce, and be strong enough to withstand all kinds of jumping. It was also important that it be easy to transport, set up, and store.

It took almost twelve years. But finally, in 1937, George had created a “bouncing table” that met most of his requirements. He had also invented the machines necessary to produce them and had changed the name to *trampoline*,

¹contraption: a gadget or device



from the Spanish word *trampolín*, meaning “springboard.”

He was now ready, he decided, to make his fame and fortune selling his invention. With trampolines strapped to the top of his old car, he set off on a cross-country tour. In town after town, he demonstrated his contraption in any place where there would be crowds—in front of supermarkets, at parks, at county fairs, and outside sports stadiums. With the money he made from these exhibitions, he bought more materials and continued to develop and improve his invention.

During World War II, George enlisted in the U.S. Navy. Before long, he had persuaded both the army and navy to use trampolines in their preflight training programs, especially those for soldiers learning to be paratroopers² and pilots.

After the war, George went into the trampoline business full-time. Sales were slow at first, but then they suddenly skyrocketed. George’s hard work, persistence, and unflagging optimism had finally paid off. People bought trampolines for their backyards. Colleges added them to their gymnastics programs. NASA³ began using them to give astronauts the feeling of weightlessness that the trampoline simulates.

And there’s another place where you’re bound to see the invention. It’s the place where a kid first got the idea for them: at the circus.

²**paratroopers:** troops trained to parachute from airplanes

³**NASA:** National Aeronautics and Space Administration

More Facts About Trampolines

Before the trampoline, there was the “tossing blanket” of medieval Europe. With several people holding the edges of a large blanket, a person was tossed up and down in the air.



In 1964, a “spaceball” fad swept the country. Spaceball is a sport combining elements of basketball and volleyball and played on a trampoline. In that same year, the International Trampoline Federation was formed with seven member nations. Today over forty nations are members, and, for the first time ever, trampolining was a medal sport at the Olympics in Sydney, Australia, in September 2000.



In 1981, Jeff Schwartz of Illinois set the record for bouncing on a trampoline the longest. Schwartz bounced for 266 hours, 9 minutes—a period of more than eleven days. The rules allowed him closely clocked time-outs for eating, sleeping, and using the rest room.



Go On



1

George Nissen was a successful inventor. According to the information in the passage, what qualities does a successful inventor need to have? Support your answer with details from the passage.

2

George Nissen had several requirements for making a trampoline. What were his requirements, and how did they lead to the success of the trampoline? Support your answer with details from the passage.



3

How did George Nissen's invention of the trampoline go beyond what he originally intended or expected? Support your answer with details from the passage.

STOP! STOP! STOP! STOP! STOP!



Session 1: Science

- 1** Frogs can interact with other organisms in their habitat as a predator or as prey.

Give ONE example of an organism that could be a frog's PREY.

Answer _____

Explain why this organism would be considered a frog's prey.

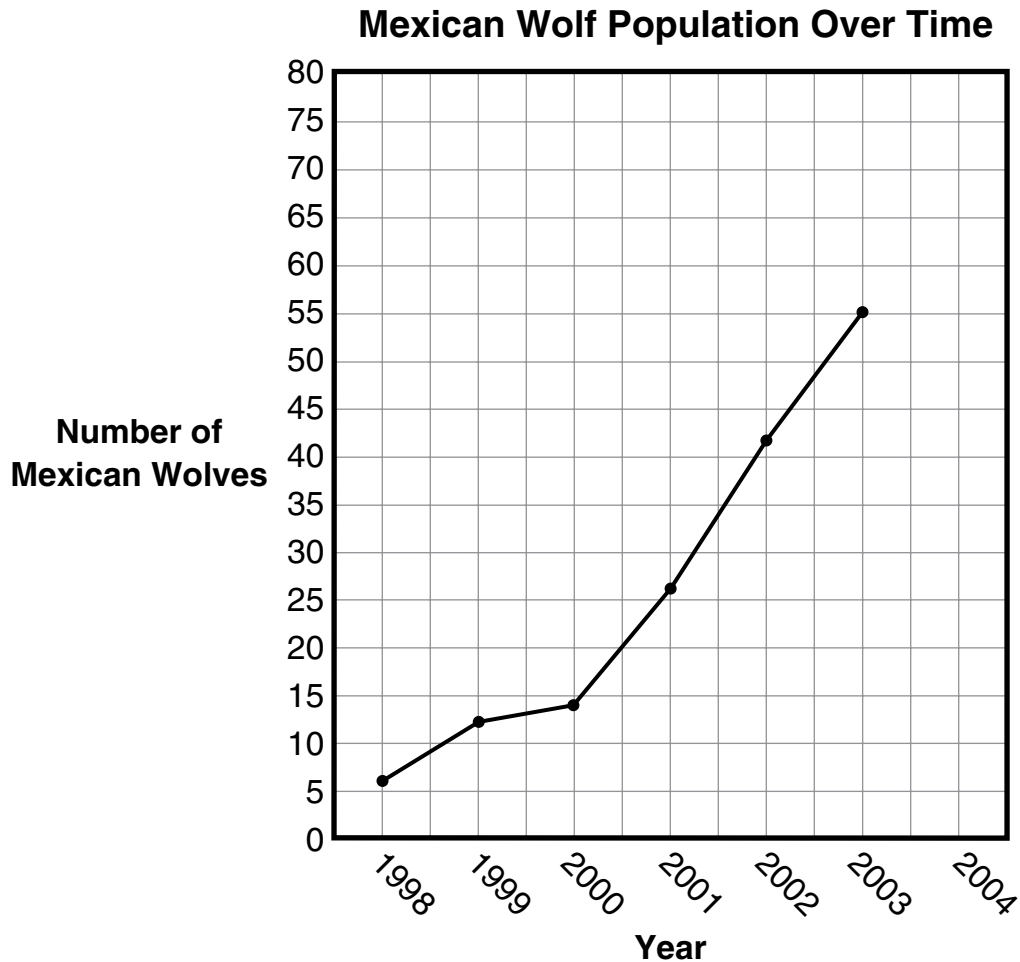
Give ONE example of an organism that could be a frog's PREDATOR.

Answer _____

Explain why this organism would be considered a frog's predator.

2

The Mexican wolf population was almost extinct by 1970. Efforts to increase the Mexican wolf population in the southwestern United States began in 1998. The graph below shows the progress of those efforts.



Describe the overall trend in the Mexican wolf population from 1998 to 2003.

Go On



Session 1

Between which TWO years did the population change the LEAST?

Answer _____ and _____

Using the information in the graph, predict the number of Mexican wolves in 2004.

Answer _____ Mexican wolves



3

Antonio is creating a diagram of the water cycle. Describe THREE processes in the water cycle that would be included in the diagram.

- 1) _____

- 2) _____

- 3) _____

Antonio is going to include the sun in the diagram of the water cycle. Explain how the sun plays a role in the water cycle.

STOP! — STOP! — STOP! — STOP! — STOP!



ISTEP + Mathematics Reference Sheet

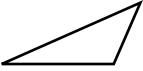
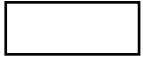



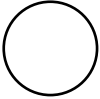


Figure	Formulas for Area (A) and Circumference (C)	
Triangle 	$A = \frac{1}{2}bh$	Area = $\frac{1}{2} \times$ base \times height
Rectangle 	$A = lw$	Area = length \times width
Trapezoid 	$A = \frac{1}{2}h(b_1 + b_2)$	Area = $\frac{1}{2} \times$ height \times sum of bases
Parallelogram 	$A = bh$	Area = base \times height
Square 	$A = s^2$	Area = side \times side
Circle 	$A = \pi r^2$ $C = 2\pi r$	Area = $\pi \times$ square of radius Circumference = $2 \times \pi \times$ radius $\pi \approx 3.14$ or $\frac{22}{7}$

Figure	Formulas for Volume (V) and Surface Area (SA)	
Rectangular Prism 	$V = lwh$ $SA = 2lw + 2hw + 2lh$	Volume = length \times width \times height Surface Area = $2(\text{length} \times \text{width}) + 2(\text{height} \times \text{width}) + 2(\text{length} \times \text{height})$
Cylinder 	$V = \pi r^2 h$ $SA = 2\pi r^2 + 2\pi rh$	Volume = $\pi \times$ square of radius \times height Surface Area = $2 \times \pi \times$ square of radius $+ 2 \times \pi \times$ radius \times height

Conversions

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5,280 feet

1 mile = 1,760 yards

1 pound = 16 ounces

1 ton = 2,000 pounds

1 minute = 60 seconds

1 hour = 60 minutes

1 day = 24 hours

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 meter = 1000 millimeters

1 meter = 100 centimeters

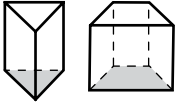
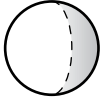

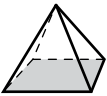
1 kilometer = 1000 meters

1 gram = 1000 milligrams

1 kilogram = 1000 grams

1 liter = 1000 cubic centimeters

1 liter = 1000 milliliters

Figure	Formulas for Volume (V) and Surface Area (SA)		
General Prisms 	$V = Bh$	Volume = area of base \times height Surface Area = sum of the areas of the faces	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$
Sphere 	$V = \frac{4}{3}\pi r^3$ $SA = 4\pi r^2$	Volume = $\frac{4}{3} \times \pi \times$ cube of radius Surface Area = $4 \times \pi \times$ square of radius	
Right Circular Cone 	$V = \frac{1}{3}\pi r^2 h$	Volume = $\frac{1}{3} \times \pi \times$ square of radius \times height	
Regular Pyramid 	$V = \frac{1}{3}Bh$	Volume = $\frac{1}{3} \times$ area of base \times height	

Slope-Intercept Form

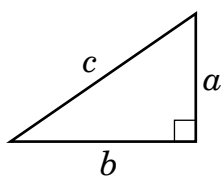
$$y = mx + b$$

where m = slope and b = y -intercept

Simple Interest Formula

$$I = prt$$

where I = interest, p = principal, r = rate, and t = time in years

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Temperature Formulas

$$^{\circ}\text{C} = \frac{5}{9}(F - 32)$$

$$^{\circ}\text{Celsius} = \frac{5}{9} \times (^{\circ}\text{Fahrenheit} - 32)$$

$$^{\circ}\text{F} = \frac{9}{5}C + 32$$

$$^{\circ}\text{Fahrenheit} = \frac{9}{5} \times ^{\circ}\text{Celsius} + 32$$

Distance Formula

$$d = rt$$

where d = distance, r = rate, and t = time

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NOT
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PAGE**

Applied Skills Assessment

Mathematics • English/Language Arts • Science

Grade 6



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